THE LIFE HISTORY OF *OGYRIS OTANES* C. & R. FELDER IN THE STIRLING RANGE, WESTERN AUSTRALIA (LEPIDOPTERA: LYCAENIDAE)

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Abstract

Observations on the life history and biology of *Ogyris otanes* were made in the Stirling Range, Western Australia in November 1990. Details of the life cycle are presented and the early stages described and illustrated. Larvae associate with *Camponotus* sp. (*claripes* group) ants, and feed at night on small specimens of the host plant, *Choretrum glomeratum* R. Br. The common name "western dark azure" is proposed for Western Australian populations of *O. otanes*.

Introduction

Ogyris otanes has a wide, disjunct distribution in southern Australia, extending from western New South Wales, through north-western Victoria, southern South Australia and Kangaroo Island, to Israelite Bay, the Stirling Range and Leeman in Western Australia (Common and Waterhouse 1981; Hay 1989; Field 1990). We propose the common name "western dark azure" for the Western Australian populations of *O. otanes*, which is to be given subspecific status in a forthcoming publication (E. D. Edwards, in prep.). The first specimens were collected in the Stirling Range by F. L. Whitlock in 1911. No further specimens were recorded for over 75 years, until a number of populations were located within the Stirling Range National Park (Hay 1989).

The early stages are described from material collected in December 1990, from the Stirling Range sites located by Hay. A number of pupae, and larvae from first to final instar were reared to adult, and three ova to mature larvae.

Life History

Host plant: *Choretrum glomeratum* R. Br., Santalaceae.

Egg (Figs. 1, 6, 7): White, hemispherical, top slightly flattened with shallow micropylar depression; surface densely pitted, the size of the pits decreasing toward the micropyle. Diam. 1.0-1.1 mm.

Larva: 1st instar (Figs. 2, 3, 8, 9): Length 2.5 mm. Head shiny brown-black, prothoracic and anal plates mottled brown. Prothoracic and anal segments with long colourless primary setae and numerous smaller setae. Ground colour cream, translucent, with numerous obscure pink markings on each segment. Gut contents give a green appearance to anterior segments. 3rd-5th instars (Fig. 4): Length 15-25 mm. Head light brown, drawn in behind prothorax. Body cream, translucent, with distinct grey mid-dorsal vein; spiracles black. Prothacic plate shining grey-brown, diamond shaped (apparent in lateral view of larva, Fig. 4), bifurcate; anal plate shining grey-

brown, rectangular. Obscure pink markings around prothoracic and anal plates, faint pink markings around spiracles. 2-4 pairs of dorsal setae on abdominal segments 4-7. 2 pairs of prominent setae on prothoracic and anal segments; a single prominent lateral seta on each abdominal segment. Setae colourless, base black. Eversible dorsolateral organs on abdominal segment 8. A colour illustration of a mature larva and attendant ants is given by Hay (1989).

Pupa (Fig. 5): Initially very light tan or cream in colour, glossy, mid dorsal vein prominent. Over a period of days developing a dusty appearance and darkening to very light brown, especially on thorax and wing cases; dorsal vein less prominent. Spiracles girdled with brown markings. Attached to substrate by cremaster and a central girdle. Length 18 mm.

Biology

Ova are deposited singly or in small batches on leaf litter or detritus at the base of the host plant. Observed batch sizes were 1, 1, 1, 3, 4 and 4. We observed a clear preference for plants that are small in stature. Braby (1990) made similar observations of the Eltham Copper *Paralucia pyrodiscus lucida* Crosby, and proposed possible reasons for this preference.

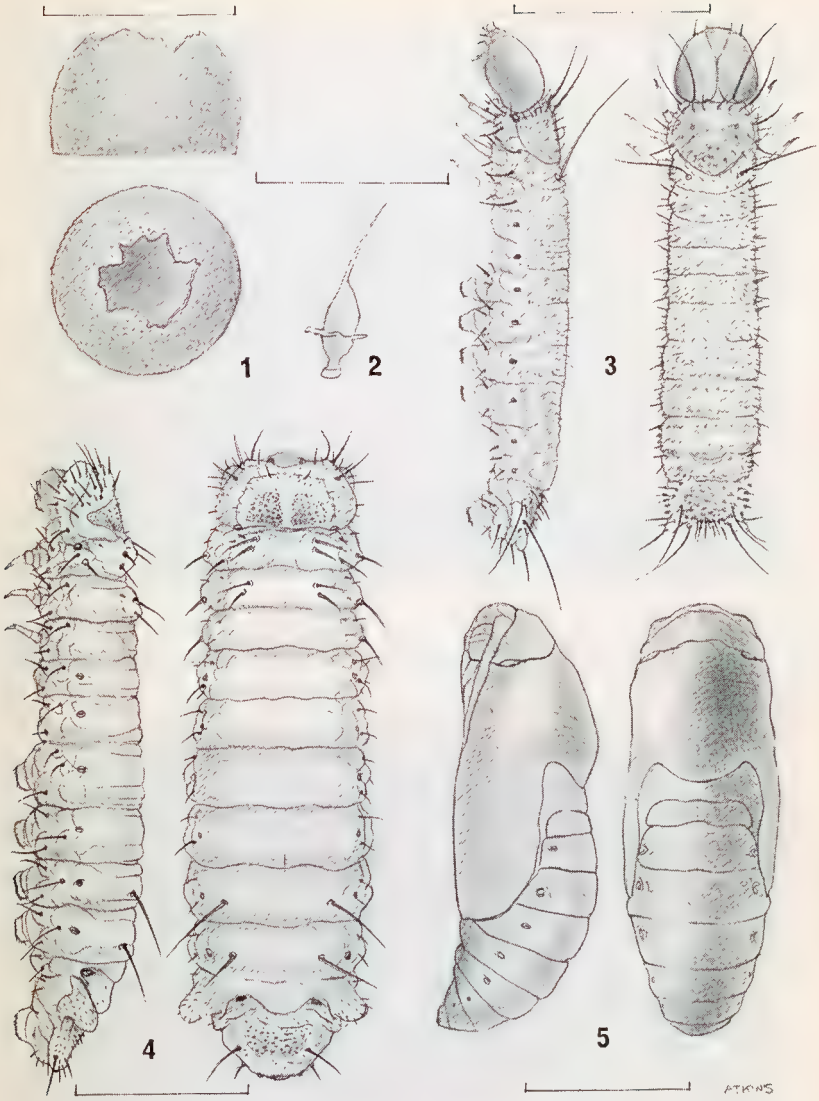
Larvae feed at night on foliage, attended by *Camponotus* sp. (*claripes* group) workers and soldiers. During the day larvae shelter within the ant's nest at the base of the foodplant. The relationship with *Camponotus* sp. appears to be specific, and is probably obligatory. Pupation occurs within the ant's nest. Pupae are usually attached to a solid object, such as a root of the host plant. Adults are on the wing from October to March, with peaks in December and March. Adults have not been observed feeding at flowers.

"Traps" may be constructed for larvae and pupae by heaping twigs, rocks and bark around the base of plants displaying signs of feeding. The usual method of collecting larvae is to examine plants at night (Hay 1989); these may then be reared on a supply of excised foodplant.

Discussion

The early stages are similar to Fisher's (1978), and Common and Waterhouse's (1981) descriptions of *O. otanes* from South Australia. Known details of the life history at Leeman are similar, with a host ant from the same species group. However, Leeman specimens feed on a different foodplant (*Leptomeria preissiana* (Miq.) DC., family Santalaceae).

Conservation of *O. otanes* has been of interest both to collectors and the general public (Nicholson 1990; Hay 1989). The species is proposed for inclusion on a forthcoming list of rare and endangered Australian butterflies. Whilst Stirling Range populations are well protected through National Park status and management oriented to biological conservation, the Leeman and Israelite Bay populations may be at risk. Further research is required to determine the conservation status of this subspecies in Western Australia.



Figs 1-5. Life history of *O. otanes* from Stirling Range, Western Australia: (1) eclosed ovum, lateral and dorsal view (scale line = 1.0 mm); (2) 1st instar larval posterior seta (scale line = 0.02 mm); (3) first instar larva, lateral and dorsal view (scale line = 1.0 mm, appearance reconstructed from damaged specimen); (4) mature larva, lateral and dorsal view (scale line = 5.0 mm); (5) pupa, lateral and dorsal view (scale line = 5.0 mm).

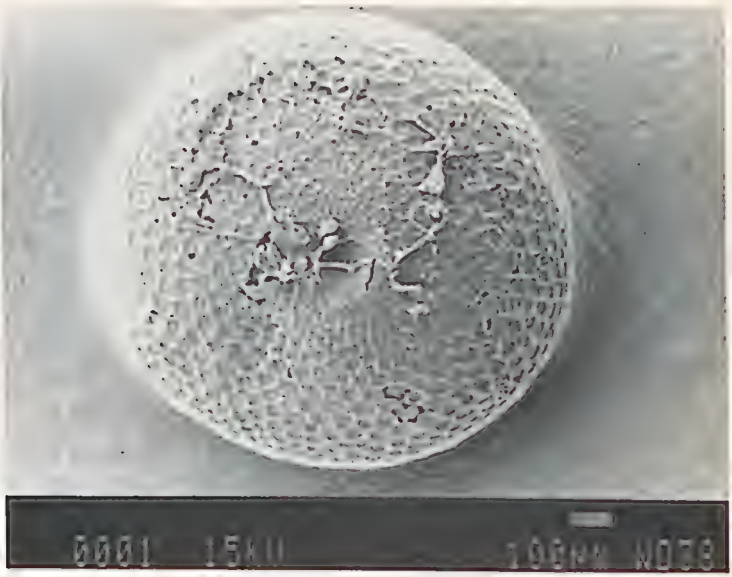


Fig. 6. Scanning electron micrograph (SEM) of ovum, showing reticulate pattern of pits.

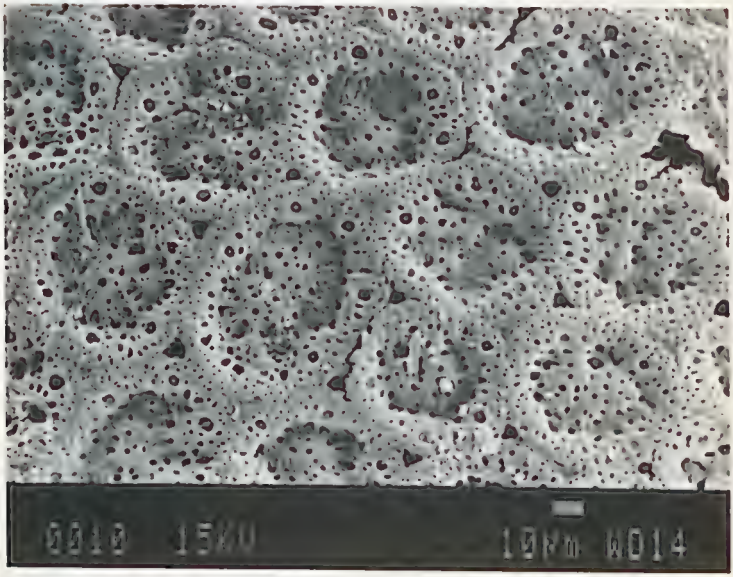


Fig. 7. SEM of ovum, detail of pits.

Fig. 8. SEM of first instar larva, detail of prothoracic plate.

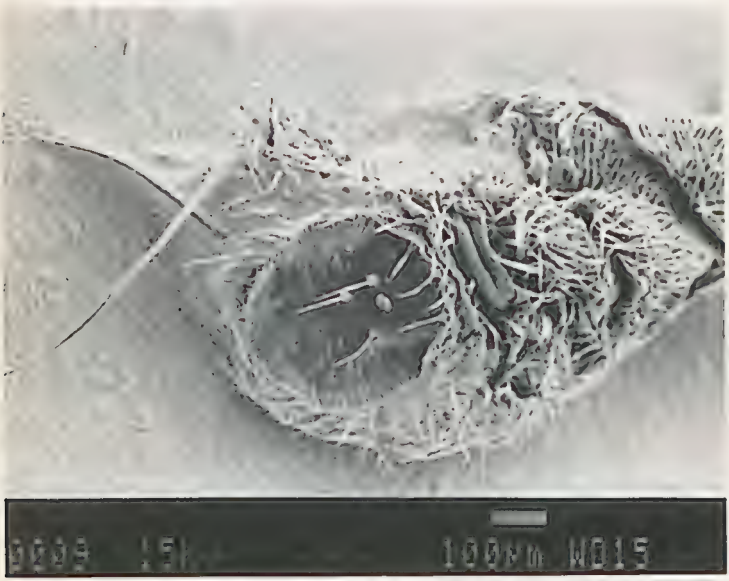


Fig. 9. SEM of first instar larva, detail of anal plate.

Note

Specimens relevant to the material presented in this paper are lodged in the Insect collection, Department of Conservation and Land Management, 50 Hayman Road Como, Western Australia.

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